

# 25 YEARS OF LENIENCY PROGRAMS: A TURNING POINT IN CARTEL PROSECUTION



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## I. INTRODUCTION

This contribution reviews what we know about the effectiveness of leniency or amnesty programs in cartel prosecutions. Leniency programs have gradually been adopted by as many as 53 competition policy jurisdictions around the globe during the last 25 years. We show that the available evidence supports that the leniency programs have had a strong impact on anti-cartel policy design and effectiveness. The introduction of leniency programs has offered in most jurisdictions a short-term impact in the discovery of existing cartels, but in the long-term the number of discovered cartels faded down. This is not because cartels become more secretive and remained under cover, but otherwise we show that after leniency is introduced, a strong destabilization and dissuasive effects prevail.

## II. LENIENCY PROGRAMS AND CARTEL PROSECUTION

Leniency or amnesty programs for destabilizing and discovering secretive cartels were effectively introduced 25 years ago. Although the programs have been so popular for law and policy makers, there have always been some doubts regarding their efficacy in discovering existing cartels, and even more doubts regarding their efficacy in deterring cartel formation.

As stated by Joseph Harrington, the general understanding of the theoretical literature is to support leniency programs. The assumption is that cartels allow firms to obtain supra-normal revenues and profits, and that by offering a lenient treatment to the whistleblower among the firms breaching antitrust law, cartel stability may be reduced. Harrington claims that “it is well-documented that many firms have used the amnesty program and it has provided valuable evidence in support of the prosecution’s case.” However, he also states that “it is unknown how influential leniency programs have been in inducing cartels to collapse or in deterring them from forming.”<sup>2</sup>

Indeed, we also do not have a precise measure of how much firms benefit from participating in cartels. The existing literature has analyzed the drivers of collusion and the determinants of cartel formation, stability and breakup.<sup>3</sup>

2 Harrington Jr, J. E., “Optimal corporate leniency programs,” *The Journal of Industrial Economics*, 56(2), 215-246, (2008).

3 See Levenstein, M. & Suslow, V. Y., “What Determines Cartel Success?,” *Journal of Economic Literature*, XLIV, 43-95, (2006); Levenstein, M. & Suslow, V. Y., “Breaking Up is Hard to Do: Determinants of Cartel Duration,” *Journal of Law and Economics*, 54(2), 455-492, (2011); Herold, D. & Paha, J., “Cartels as Defensive Devices: Evidence from Decisions of the European Commission 2001–2010,” *Review of Law & Economics*, 14(1), (2018).

Scholars have also studied the overcharges applied by cartelists and implications for fining policy<sup>4</sup> and the deterrence attained due to the antitrust authorities' activity or the existence of effective competition policy.<sup>5</sup> There are some papers that also analyze the impact of competition policy and antitrust authorities' actions on firms' profits and firms' stock market prices.<sup>6</sup> However, the existing papers studying the effect of cartels on profitability either lack a good counterfactual, or do not properly address the problem of causality.

Our research in the last years has focused precisely on offering new and sound evidence of the causal effect of the introduction of leniency in the efficacy of competition policy, in general, and in particular in cartel detection, destabilization, and deterrence.

### III. LENIENCY ACROSS THE WORLD

Figure 1 shows when leniency programs have been gradually adopted as part of antitrust enforcement reforms across developed and developing economies. The first effective antitrust leniency program was created in the United States 25 years ago, in 1993. Its apparent success in obtaining evidence to prosecute cartel members, destabilizing existing cartels, and deterring cartel formation was quickly noted by antitrust authorities elsewhere.

In Europe, the European Commission ("EC") passed the first leniency program as early as 1996 (a program that was overhauled in 2002 and 2006) and most European countries adopted their programs after this date. Korea was also an early adopter of the program in 1997, the first of the Asian countries. Australia adopted the leniency program for cartel prosecution in 2003. A leniency program was to be found on all five continents by 2004 when South Africa passed its leniency program.

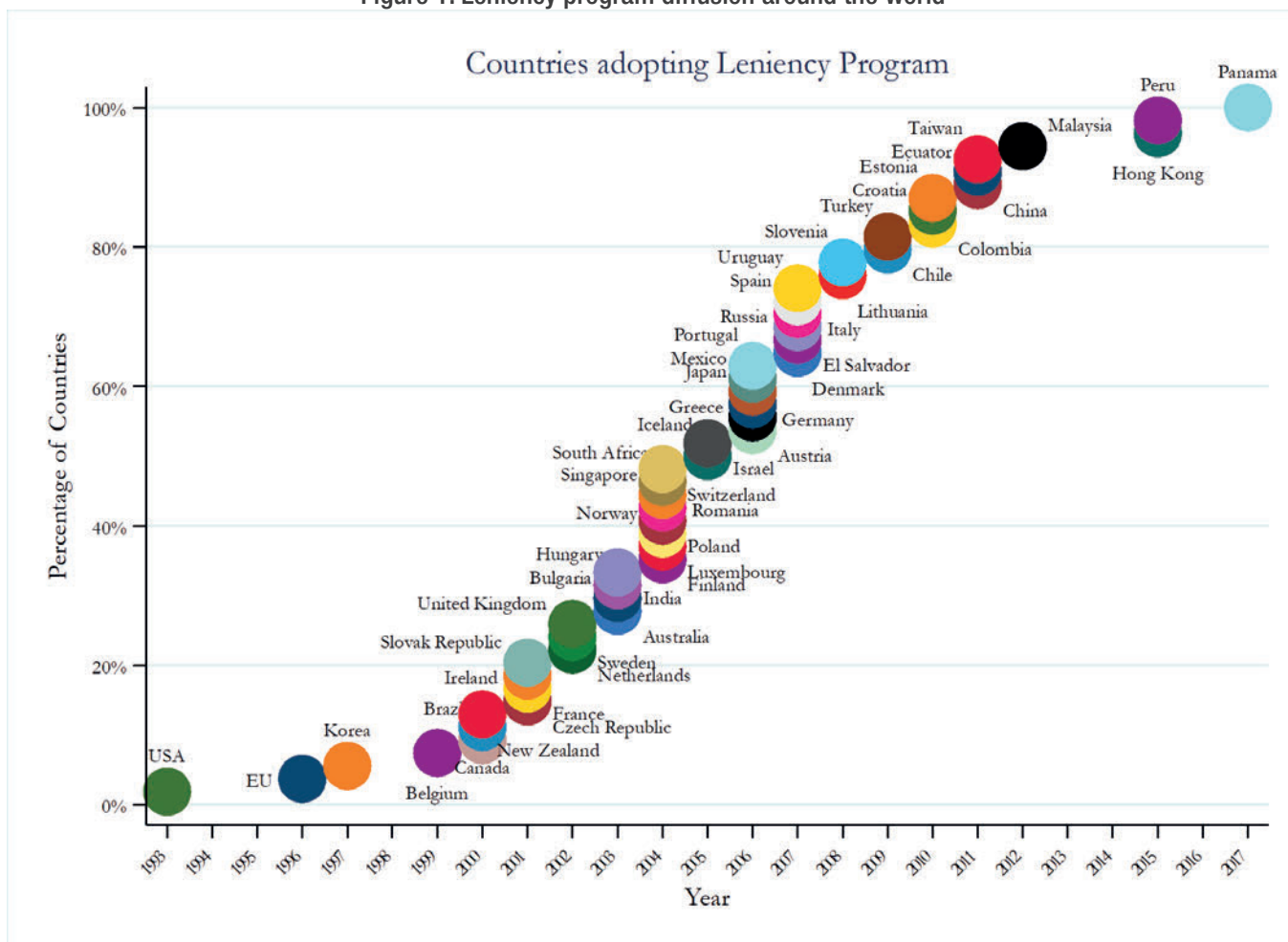
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4 See, for instance, Connor, J.M. & Lande, R.H., "Cartel Overcharges and Optimal Cartel Fines," 3. *Issues in Competition Law and Policy* 2203 (ABA Section of Antitrust Law), (2008); Boyer, M., & Kotchoni, R., "How much do cartel overcharge?," *Review of Industrial Organization*, 47(2), 119-153, (2015); Connor, J. M., & Bolotova, Y., "Cartel overcharges: Survey and meta-analysis," *International Journal of Industrial Organization*, 24(6), 1109-1137, (2006).

5 See, for instance, Smuda, F., "Cartel overcharges and the deterrent effect of EU competition law," *Journal of Competition Law and Economics*, 10(1), 63-86, (2013); Bos, I., Davies, S., Harrington Jr, J. E., & Ormosi, P. L., "Does enforcement deter cartels? A tale of two tails," *International Journal of Industrial Organization*, 59, 372-405, (2018).

6 See, e.g. Bosch, J. C., & Eckard Jr, E. W., "The profitability of price fixing: evidence from stock market reaction to federal indictments," *The review of Economics and Statistics*, 309-317, (1991); Thompson, J. S., & Kaserman, D. L., "After the fall: Stock price movements and the deterrent effect of antitrust enforcement," *Review of Industrial Organization*, 19(3), 329-334, (2001); Aguzzoni, L., Langus, G., & Motta, M., "The effect of EU antitrust investigations and fines on a firm's valuation," *The Journal of Industrial Economics*, 61(2), 290-338, (2013).

Figure 1: Leniency program diffusion around the world



Source: Updated from Borrell et al., (2014).

In Borrell, Jiménez & García<sup>7</sup> we found that leniency programs have had a significant impact, increasing the average perception of a country's antitrust policy among business people by an order of magnitude from 10 percent to 21 percent.

We also found that countries self-select: the one with higher income per capita with more effective antitrust policies have been the ones that have adopted leniency programs earlier. However, controlling for the self-selection problem (i.e. "good" countries adopted "good" policies), we show that leniency programs have had a significant positive impact on the perception of a country's antitrust policy among the business community, especially in those countries whose antitrust enforcement is least credible.

<sup>7</sup> Borrell, J. R., Jiménez, J. L., & García, C., "Evaluating antitrust leniency programs," *Journal of Competition Law and Economics*, 10(1), 107-136, (2014).

## IV. LENIENCY PROGRAM AT THE EUROPEAN UNION

At the European Union (“EU”), the leniency program was not only a weapon of mass discovery of cartels, but also a turning point in a critical juncture. Soon after the introduction of the program in 1996, the EC identified a large number of cartels, obtained hard evidence of the breaching of the cartel prohibition which was a key driver for sanctioning collusion. This success was a key determinant for deepening the EU integration in competition policy.

While the prohibition of cartels was enshrined in the EU's founding treaties, the fight against cartels showed neither the same determination in enforcement nor the same outcomes before and after the introduction of the leniency program.

In Ordóñez-de-Haro, Borrell & Jiménez,<sup>8</sup> we show that anti-cartel policy has evolved according to what supra-national theorists predict in a successful process of integration. It has been the outcome of a process by which EU institutions have been able to broaden and deepen the policy areas in which they were entitled. Unexpectedly, it was the leniency program, the key policy innovation, that led to a significant improvement in anti-cartel policy effectiveness and the expansion of the EU cartel policy domain.

The leniency program was passed in 1996 just starting the deep EU competition policy reforms adopted in the early 2000s. The origins of such reforms have been little analyzed. Between 1993 and 1995, the EC was highly criticized. The main argument adduced in support of this criticism was based on the increasing politicization of EC competition policy. There was a growing discomfort with how the EC was handling anti-cartel policy.

We find that there was an unexpected interplay between the success of the leniency program in the fight against cartels and the new reform momentum that led to the 2004 modernization of competition policy. The success in the fight against cartels completely changed the position of the Commission and offered the chance to lead a new phase of supra-national integration in the competition policy domain.

This shift in legitimacy strongly reinforced the bargaining position of the EC in front of some Member State governments, particularly that of Germany, that were highly critical of the previous discretionary political enforcing of cartel policy in particular, and competition policy in general.<sup>9</sup> The recurrent claims of transferring competition policy to an independent European authority separate from the EC were no longer raised again. So, the inter-governmental prediction that competition policy would be transferred to the EC as long as the Member State governments would agree do not seem to hold in the case of the centralization of competition policy in the EC.

Also, contrary to what we would expect from the critical political economy interpretation of the course of actions that led to an increasing enforcement of cartel policy at the hands of the EC, the paradox is that as many as 61 percent of the founding firms in the European Round Table of Industrialists (11 out of 18 founding members in 1983), which were supposedly promoting the enforcement of a “more liberal” competition policy, have been sanctioned and fined as members of cartels by 2014 by the EC. In fact, as many as 48 percent of the current members of the European Round Table of Industrialists (24 out of 50 members in 2016) have got a cartel fine. Additionally, as many as 80 percent of the members of the Competitiveness Advisory Group named by the President of the Commission in February 1995 have been fined already.

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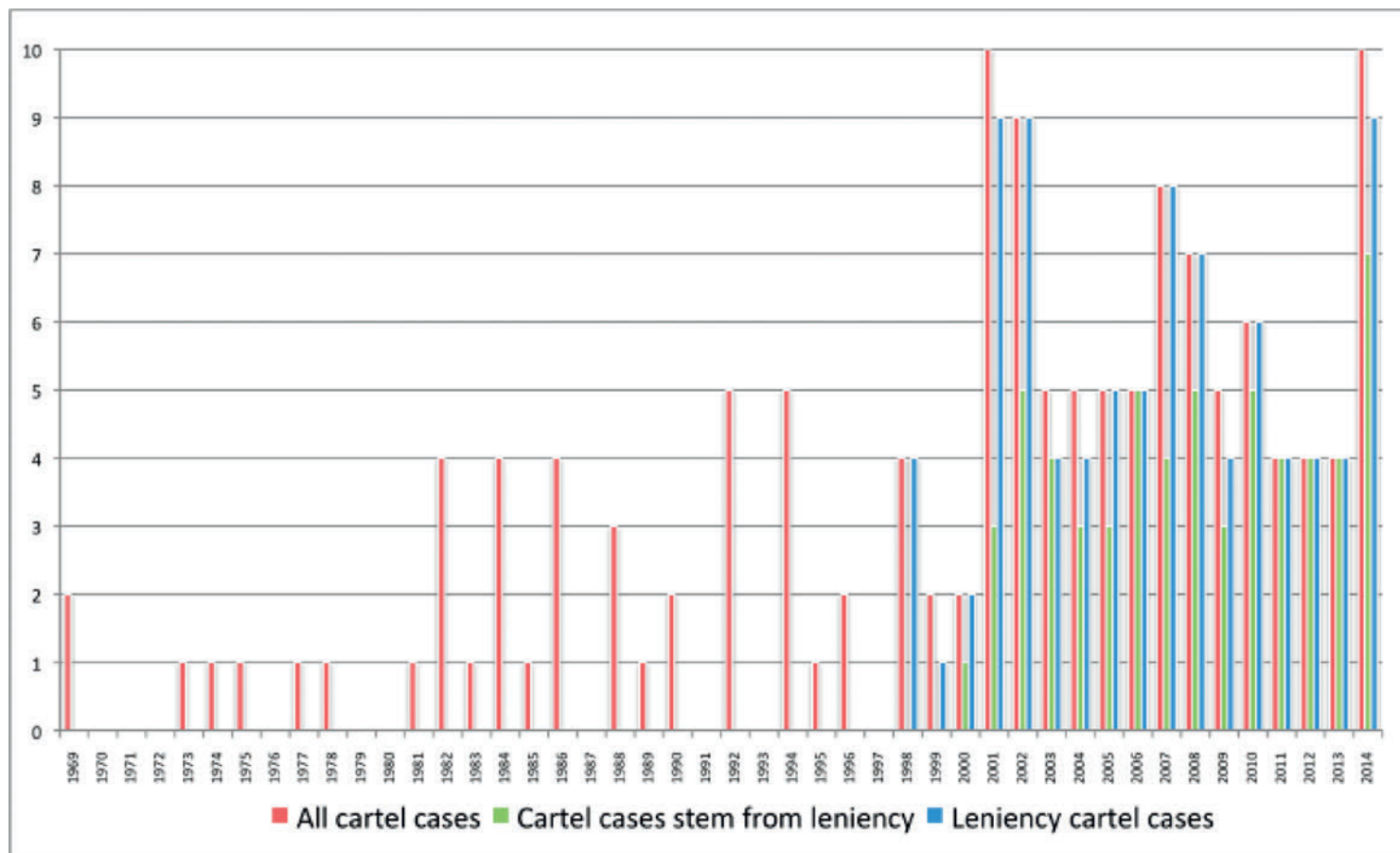
8 Ordóñez-de-Haro, J. M., Borrell, J. R. & Jiménez, J. L., “The European Commission's Fight against Cartels (1962–2014): A Retrospective and Forensic Analysis,” *JCMS: Journal of Common Market Studies*, 56(5), 1087-1107, (2018).

9 In 1993, Germany again proposed, as in 1960, the establishment of a European Cartel Office or European Competition Office taking responsibility for all duties delegated to the Commission on cartels, abuse of dominant position, mergers and state aid at that time. There was a widespread perception in 1995 that some reform of European competition law and policy was unavoidable. However, the German authorities were not able to maintain sufficient momentum to build the required alliances with other Member States and the proposal of the European Cartel Office was lost.

## V. PATTERNS OF CARTEL DISCOVERY AFTER LENIENCY

Since 1998 onwards, the leniency program has been broadly applied in nearly all the uncovered cartels sanctioned by the EC as it can be seen in Figure 2. EU leniency notices have proven to be the EC's most effective tools in uncovering and fining cartels. It was applied in 94 percent of the cases between 1998 (the first decision) and 2014. Moreover, the EC initiated an investigation into a cartel case following a leniency application in 70 percent of the cases (60 out of 89 cases). And that after the introduction of the leniency program, the number of sanctioned cartels per year shifted significantly up.

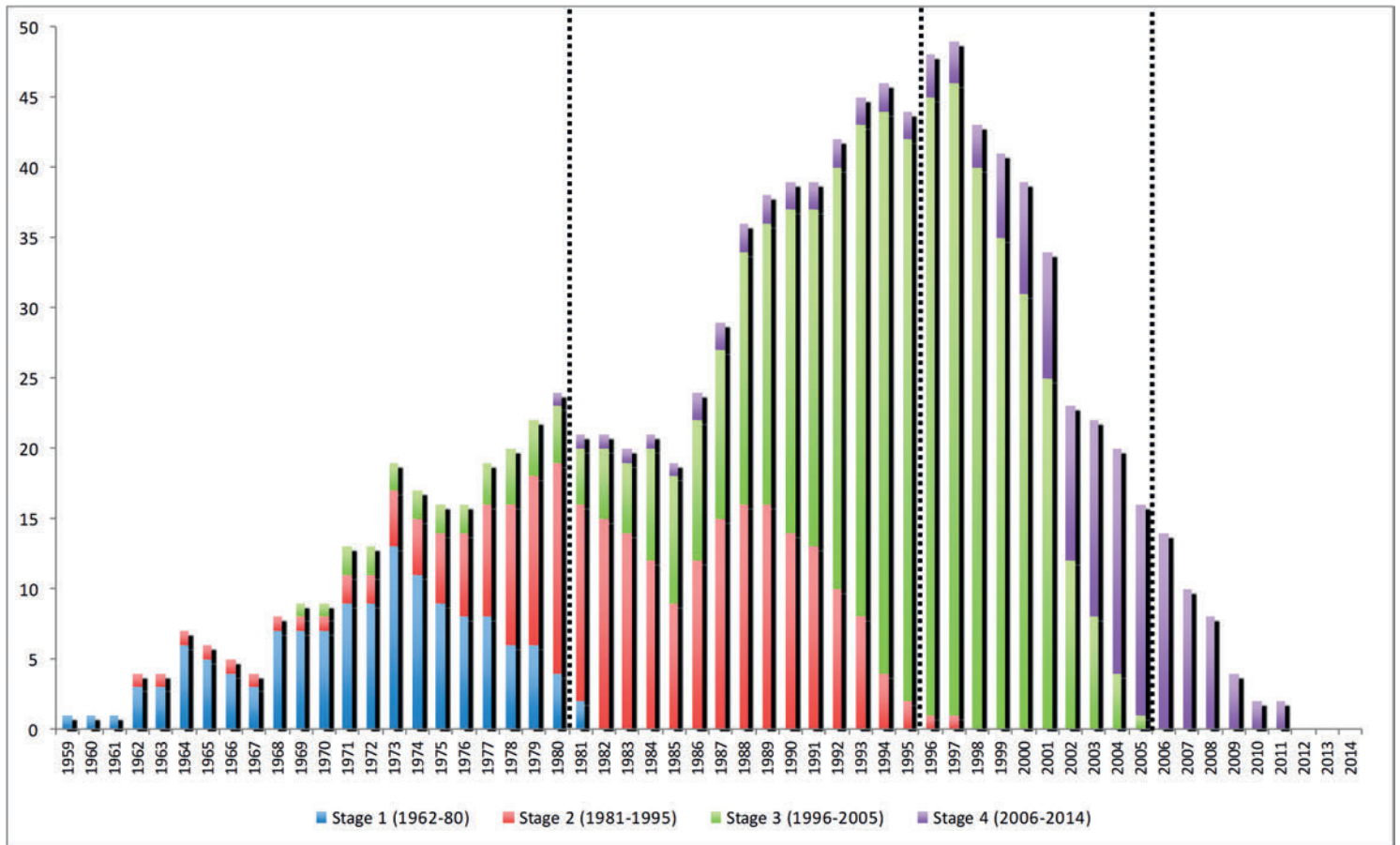
Figure 2: Sanctioned cartel cases by year (1962-2014)



Source: Ordóñez-de-Haro et al., (2018).

Regarding cartels which we know now were active at each stage, Figure 3 shows how most of the cartels that remained undetected, have finally been discovered after the introduction of the leniency program. As many as 47 cartels were active in the EU in 1996, the historical peak in active cartels effective discovery. This figure also shows what has been shown to be a regular pattern of cartel discovery after the introduction of leniency: there is always a short-term effect of leniency sharply increasing the number of cartels discovered, but then it seems that the long-term effect of the leniency program is not to increase the discovering rate, but to deter cartel creation.

Figure 3: Number of cartels that were active by year and stage at which the cartel was detected (investigation started)

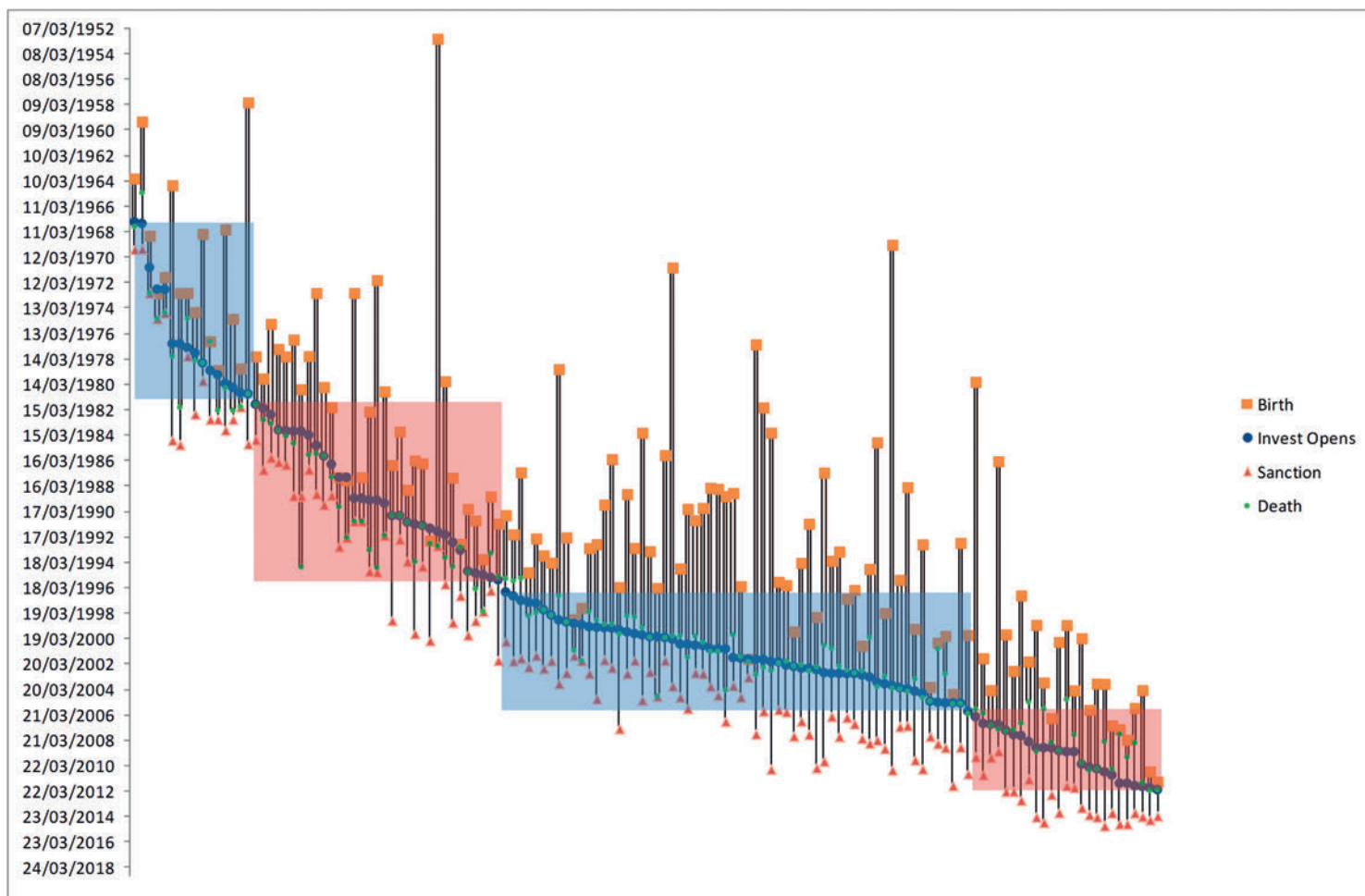


Source: Ordóñez-de-Haro et al., (2018).

Figure 4 shows the time of birth, death, detection, and sanctioning of all cartels sanctioned until 2014. It clearly shows the reduction of the duration of the cartels discovered across time: the length of the arrows in the figure diminishes across time.

It also shows how detection rates increase across time: in particularly in stage 2 (1981-1995) the cartels discovered went unnoticed in previous stage 1 (1961-1980), and also in stage 3 (1996-2005), once the EC leniency program was open for potential whistleblowers, the Commission was able to detect many cartels that went unnoticed in previous stages 1 and 2 (1961-1980 and 1981-1995).

Figure 4. Birth, death, investigation opening and sanction dates per cartel



Source: Ordóñez-de-Haro et al., (2018).

As is observed in these figures, the introduction of the leniency program marked a crucial turning-point in the EC's fight against cartels: it drove the number of detected cartels and the sanctions imposed upon them to increase substantially.

It is striking that uncovered and sanctioned cartels were increasingly formed by a smaller number of parent international companies that are using subsidiary firms to take part in many different sanctioned cartels. And, that the EU was increasingly able to detect those parent international companies' wrongdoings and sanction them.

## VI. DESTABILIZATION EFFECT OF LENIENCY PROGRAMS

In Borrell, García, Jiménez & Ordóñez-de-Haro,<sup>10</sup> we investigate the effect of the leniency programs on cartel duration. For this purpose, we use detailed information of all cartel decisions taken by the EC between 1980 and 2015, and by the Spanish Competition Authority between 1995 and 2015.

In that period there have been 196 cartel decisions (129 cases in EU and 67 cases in Spain), only 182 if we exclude 14 decisions involving only business associations but not actual firms (7 EU cases, and other 7 Spanish cases). There have been 89 decisions with leniency fine reductions since the introduction of the leniency program in the EU in 1996 (60 cases with leniency application), and in Spain in 2008 (15 leniency cases).

<sup>10</sup> Borrell, García, Jiménez & Ordóñez-de-Haro, "Cartel destabilization effect of leniency programs," In García Galindo, C. Essays on cartels and competition policy. European University Institute, PhD Thesis (2018). Department of Economics. URI: <http://hdl.handle.net/1814/59224>, DOI: 10.2870/13080.



Our main identification source comes from the fact that the date of implementation of the program is exogenous, and that it has been implemented in the different geographic areas at distinct periods of time. A limitation of working with cartel cases is that we can only observe discovered cartels, and results may not be inferred to the whole population.

Harrington & Chang<sup>11</sup> develop a model of cartel creation and dissolution that allows inferring the impact of the competition policy on the population of cartels by measuring the impact on the duration of discovered cartels.

According to their model, if the probability of discovering and convicting cartel members increases due to a change in the policy, then the least stable cartels collapse immediately. Thus, the surviving cartels have longer durations, and there is a significant rise in average duration of discovered cartels in the short-run. In the long-run, average duration of observed cartels could go up or down, since less stable cartels do not form in the first place (rise in duration) but the formerly stable cartels break up earlier (decrease in duration).

We distinguish between the short-run and long-run impact of the leniency program on cartel duration in the sense of those cartels that were formed before the implementation of the leniency policy and died after (partial treatment or short-run effect) versus those cases that were formed under the existence of the leniency program (full treatment or long-run effect).

Results show a short-run effect of leniency program: the detected cartels have longer duration than the ones in the control group. This result is consistent with the one of Harrington & Chang and Zhou.<sup>12</sup> These authors conclude that the average duration of discovered cartels rises in the short-run in response to a more effective anti-cartel policy. The reason is that if the policy is efficacious, then its adoption will immediately cause the marginally stable cartels to collapse, and they will exit the cartel population, which means that they will not come up as discovered cartels later on.

The duration of the cartels after the introduction of leniency is lower than the duration of the cartels born and dead before the implementation of the program. Harrington & Chang find that the effect of the leniency program on cartel duration in the long-run is ambiguous; it could go either up or down. On the one hand, those cartels at the margin that are less stable will not form under this policy, which entails a rise in the observed durations. On the other hand, the formerly stable long-running cartels break up earlier, reducing observed cartels durations. Our results are consistent with the second explanation: the long-run effect of the leniency program is a decrease in cartels duration.

A last question to be analyzed is whether the leniency program brings shorter or less stable cartels to light, or whether it does really deter collusion by means of the formation of shorter cartels or the formation of fewer cartels.

Harrington & Chang<sup>13</sup> claim that in response to a policy that alters the likelihood of detection and conviction, the effect of leniency program on the rate of cartels formation can be inferred by observing the duration of discovered cartels in the short-run. If average cartel duration goes up, then the policy has caused the probability that firms are discovered and convicted to rise, and thus we can conclude that it will result in fewer cartels forming in the new steady state.

Our results prove this last point: the leniency program is effective in deterring the creation of cartels, or in reducing cartel overcharges, that is, constraining the prices set by those cartels that are not deterred in the line of the results obtained by Bos et al.<sup>14</sup>

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11 Harrington Jr, J. E., & Chang, M. H., "Modeling the birth and death of cartels with an application to evaluating competition policy," *Journal of the European Economic Association*, 7(6), 1400-1435, (2009).

12 Zhou, J., "Evaluating leniency with missing information on undetected cartels: Exploring time-varying policy impacts on cartel duration," Mimeo, (2015), available at <https://ssrn.com/abstract=1985816>.

13 Harrington & Chang, *supra* note 11.

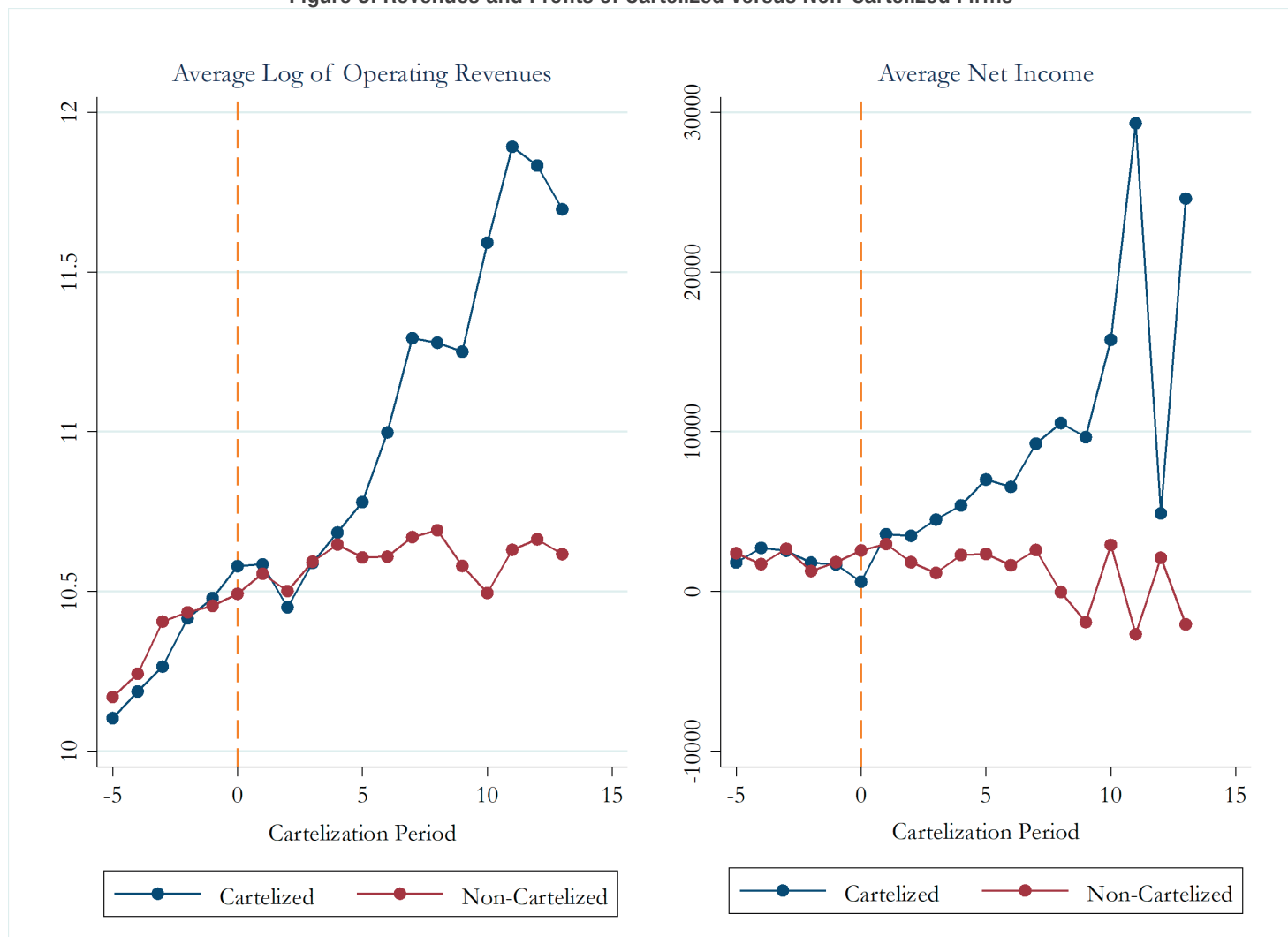
14 Boss, Davies, Harrington & Ormosi, *supra* note 5.

## VII. IMPACT OF LENIENCY ON CARTEL REVENUES AND PROFITABILITY

García<sup>15</sup> estimates the causal effect of being a cartel member on the revenues and profits of cartelized firms. For this purpose, she uses a panel data of cartelized and non-cartelized Spanish firms for the period 1992-2014. She identified which firms have participated in a discovered cartel case and could be designated as cartelized firms (treatment group), and which of them have not been cartelized in principle (non-cartelized firms, control group). She estimates the effect of belonging to a cartel on firms' revenues and profits by using the difference-in-differences estimator.

She shows that firms increase their revenues between 19 percent and 26 percent due to the collusive agreement on average, while no significant effect is found on profits on average. This result may reflect the fact that managers are the ones making the decision of colluding or not. If their reputation or salary bonuses are based on the performance of the firm, which can be measured with firms' sales, then getting involved in a cartel may be beneficial for their own interests. However, these personal interests may not always be aligned with shareholders' interests.

Figure 5. Revenues and Profits of Cartelized versus Non-Cartelized Firms



But when results by cartel duration are considered, she finds out that members belonging to a cartel that lasted for a long duration (8 years or more), not only do they increase their revenues by 29 percent to 50 percent, but also increase their profits by around 82 to 91.5 percent when compared to the average net income of the firms involved in these types of cartels. The firms taking part in these long-lived cartels appear to increase profits with respect to non-cartelized firms since the initial periods.

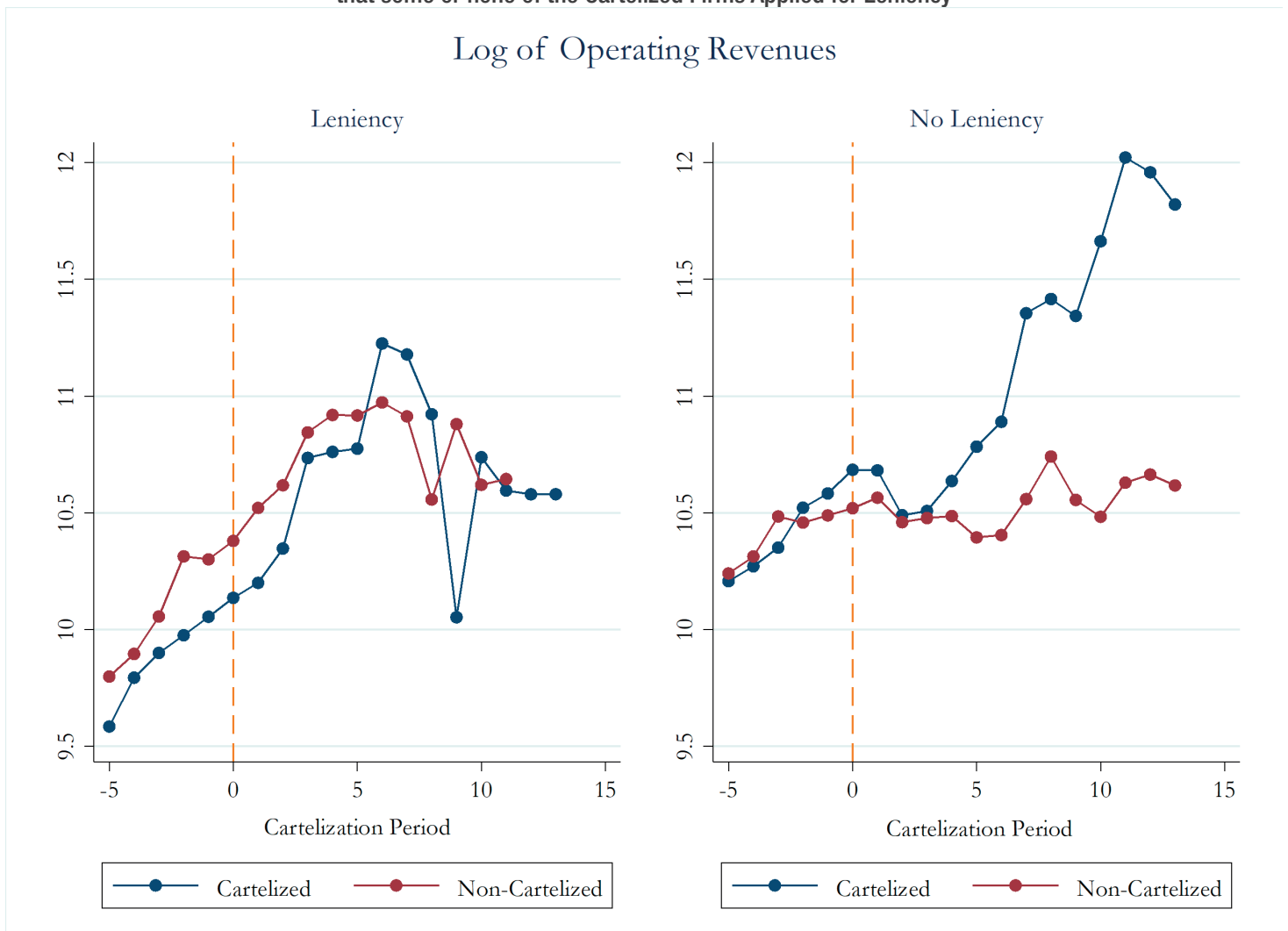
15 García, C., "Cartelization: Is it worth it?," In García Galindo, C. Essays on cartels and competition policy. European University Institute, PhD Thesis (2018). Department of Economics. URI: <http://hdl.handle.net/1814/59224>, DOI: 10.2870/13080.

García<sup>16</sup> analyzes whether there is any difference between the profitability of cartels that applied for the leniency program and those that were discovered due to complaints or a competition authority's own initiative. This analysis is relevant because it helps us studying whether this program incentivizes the breakup and discovery of all types of cartels, or only of those that are not profitable and would have broken up anyway.

The main result is that cartels in which no member applied for the leniency program increased revenues compared to the control group of non-cartelized firms. However, the firms belonging to cartels in which a member applied for the leniency program did not experience this increase.

The evidence is weaker when profits, measured as net income, are considered. However, there are also significant differences in the evolution of firms' profits belonging to cartels that benefited from the leniency policy and those that did not. Again, firms belonging to cartels in which no member applied for the leniency program did have an increase in profits with respect to the non-cartelized firms. By contrast, this was not the case in the cartels in which some member applied for the leniency program.

**Figure 6. Revenues of Cartelized versus Non-Cartelized Firms in the cases that some or none of the Cartelized Firms Applied for Leniency**



16 *Id.*

**Figure 7. Profits of Cartelized versus Non-Cartelized Firms in the cases that some or none of the Cartelized Firms Applied for Leniency**



These results may be consistent with one or both of the following effects of leniency programs: (1) whether firms that take part in cartels which are not providing their members with extra revenues and profits are more prone to be whistleblowers and apply to a competition authority for lenient treatment; or (2) the mere existence of the program is constraining cartel members overcharging, and cartel members over-revenues and supra-normal profitability.

## VIII. CONCLUSION

Leniency programs have become weapons of mass destabilization, discovery, and dissuasion in the hands of antitrust enforcers against the most damaging forms of explicit collusion among rival firms.

The success achieved by pioneering countries in implementing the leniency program to fight cartels has promoted its rapid adoption by most other countries around the world, having a significant shift-up effect on perceived efficacy of competition policy not only in the more advanced jurisdictions but also for those lagging behind in competition policy enforcement.

In the EU, the introduction of the leniency program was additionally a critical point to consolidate the EC as the main supra-national body in charge of the public enforcement of competition policy, once the program became the main driver in detecting, sanctioning, and deterring cartels, and also for the development of follow-on private damages lawsuits.

The evidence and analysis we have carried out during the last years highlights that leniency programs have had a clear destabilization effects on cartels, that cartels last for a smaller time periods, and that the uncovered cartels have difficulties to overcharge and obtain supra-normal profits.

Future research is required to specify how the leniency program has been so effective, and to what extent its effectiveness in uncovering and deterring cartels will be reinforced or otherwise diminished in the EU by the full use of the new settlement mechanisms by the EC and the alleged cartel members, and the full transposition and national enforcement of the provisions contained in the Damages Directive. It remains to be seen whether new inter-governmental forces are trying to pull back some of the integration and centralization driven by the EC since the introduction of the leniency program.

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